

(12) **United States Patent**
Karol et al.

(10) **Patent No.:** **US 6,628,617 B1**
(45) **Date of Patent:** **Sep. 30, 2003**

- (54) **TECHNIQUE FOR INTERNETWORKING TRAFFIC ON CONNECTIONLESS AND CONNECTION-ORIENTED NETWORKS**
- (75) Inventors: **Mark John Karol**, Fair Haven, NJ (US); **Malathi Veeraraghavan**, Atlantic Highlands, NJ (US)
- (73) Assignee: **Lucent Technologies Inc.**, Murray Hill, NJ (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/261,807**

(22) Filed: **Mar. 3, 1999**

- (51) **Int. Cl.**⁷ **H04L 12/56**; H04L 12/64; H04L 12/66
- (52) **U.S. Cl.** **370/237**; 370/466; 370/477; 370/401; 370/412; 370/352; 370/353; 370/354; 370/355; 370/356; 370/236; 370/230.1; 370/389; 370/395.1; 370/395.5; 370/395.65
- (58) **Field of Search** 370/229, 230.1, 370/235, 236, 237, 238, 352-353, 354, 355, 356, 357, 359, 389, 392, 395.1, 395.5, 395.51, 395.52, 395.65, 395.7, 395.72, 400, 401, 410, 412, 419, 428, 429, 465, 466, 468, 477

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,016,319	A	*	1/2000	Kshirsagar et al.	.....	370/399
6,055,561	A	*	4/2000	Feldman et al.	.....	370/220
6,091,725	A	*	7/2000	Cheriton et al.	.....	370/392
6,147,989	A	*	11/2000	Esaki et al.	.....	370/355
6,151,319	A	*	11/2000	Dommetry et al.	.....	370/395.52
6,160,793	A	*	12/2000	Ghani et al.	.....	370/236

6,201,792	B1	*	3/2001	Lahat	.....	370/236
6,252,853	B1	*	6/2001	Ohno	.....	370/242
6,259,699	B1	*	7/2001	Opalka et al.	.....	370/389
6,317,431	B1	*	11/2001	Hodgkinson et al.	.....	370/392
6,320,874	B1	*	11/2001	Crump et al.	.....	370/401
6,339,594	B1	*	1/2002	Civanlar et al.	.....	370/352
6,343,083	B1	*	1/2002	Mendelson et al.	.....	370/392
6,343,322	B2	*	1/2002	Nagami et al.	.....	370/395.3
6,343,326	B2	*	1/2002	Acharya et al.	.....	709/238
6,381,244	B1	*	4/2002	Nishimura et al.	.....	370/395.21
6,490,252	B1	*	12/2002	Riggan et al.	.....	370/237

* cited by examiner

Primary Examiner—Hassan Kizou

Assistant Examiner—Ahmed Elallam

(74) *Attorney, Agent, or Firm*—Matthew J. Hodulik; Barry H. Freedman

(57) **ABSTRACT**

Traffic on a connectionless (CL) network, such as IP packets, can be routed onto a connection oriented (CO) network, such as an ATM telephony network, when it is advantageous to do so from a user or service provider viewpoint, without affecting the ability of users to continue to use existing applications. Routing is controlled by nodes called CL-CO gateways, with connectivity to both the CL network and the Co network. When CL traffic originating at a source reached these gateway nodes, a decision is made whether to continue carrying the information in the CL mode, or to redirect the traffic to a CO network. In accordance with one embodiment of the present invention, each CL-Co gateway includes hardware and software modules that typically comprise (a) interfaces to the Co network, (b) interfaces to the CL network (c) a moderately sized packet buffer for temporarily storing packets waiting for CO network setup or turnaround; (d) a database for storing forwarding, flow control header translation and other information, and (e) a processor containing logic for controlling the gateway packet handling operations.

19 Claims, 9 Drawing Sheets

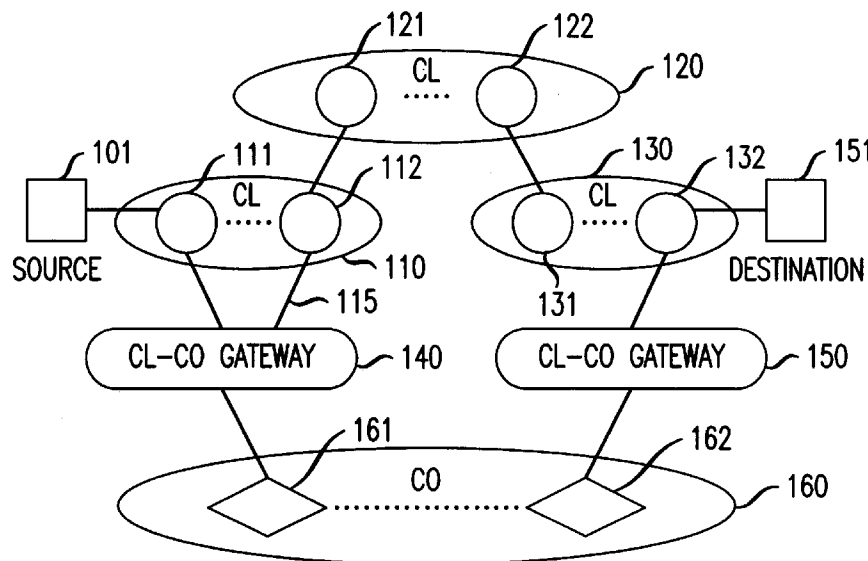


FIG. 1

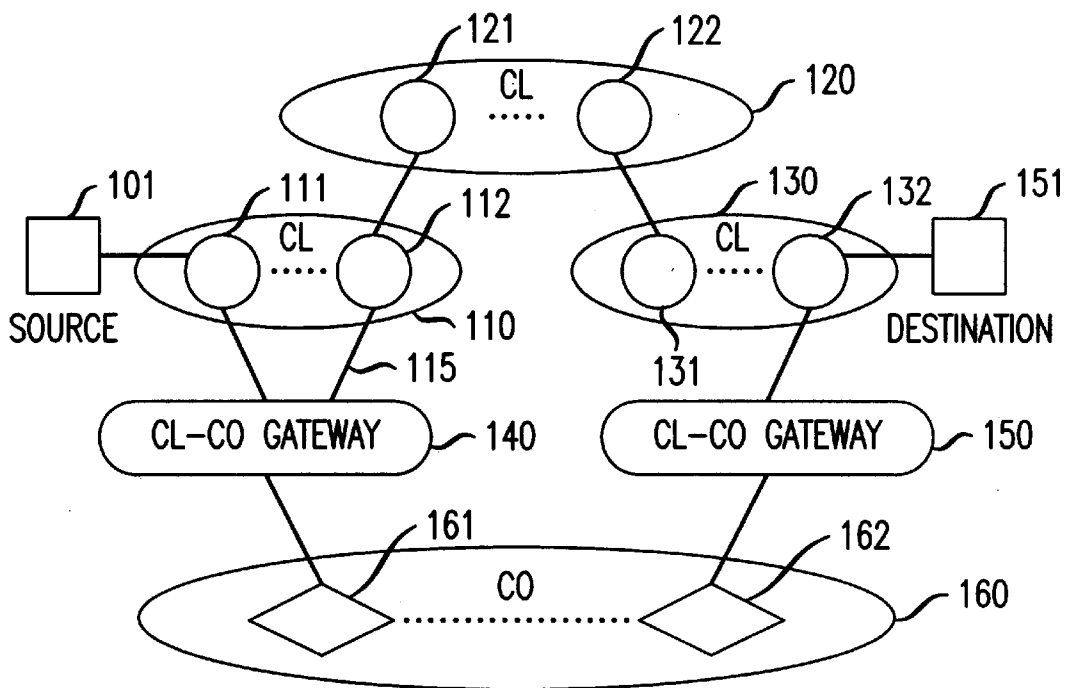


FIG. 2

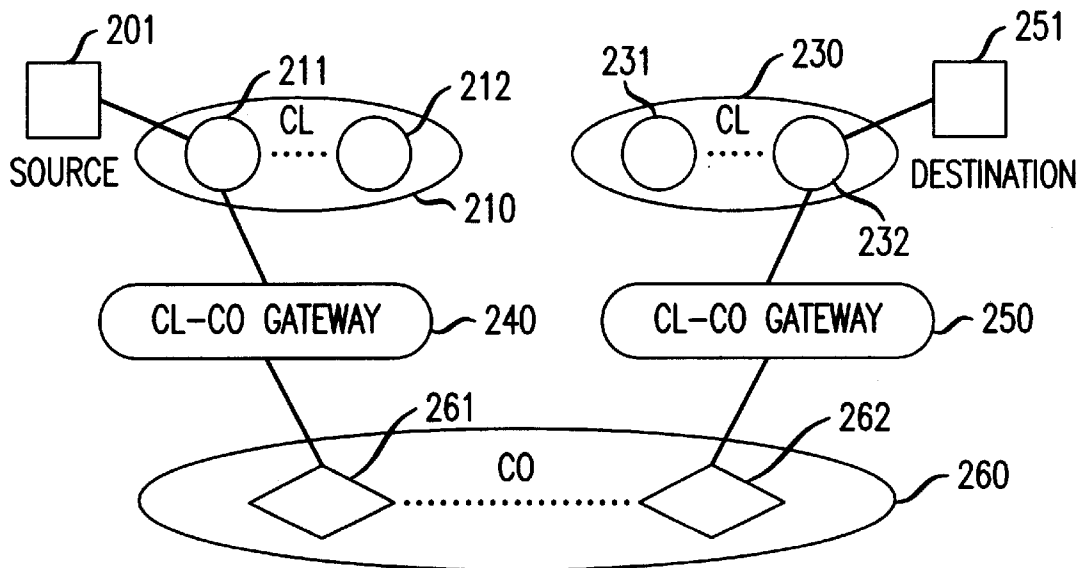
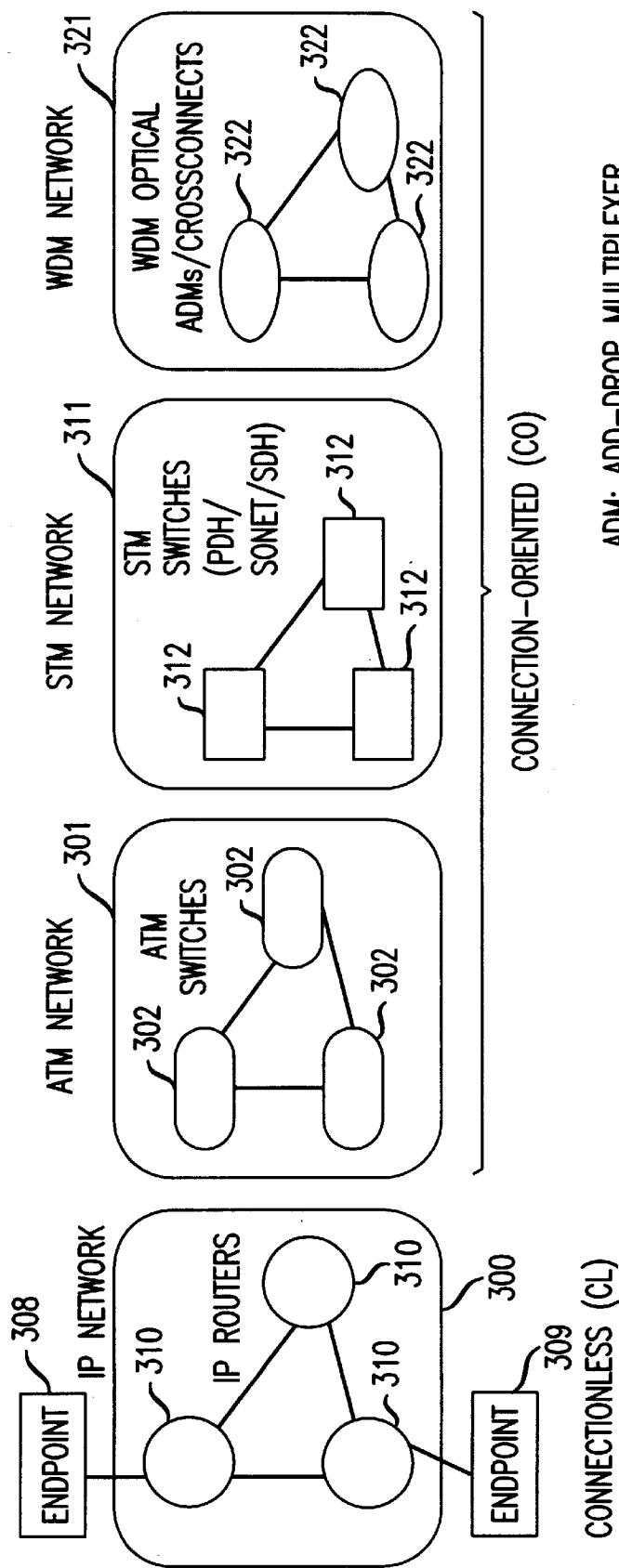


FIG. 3



ADM: ADD-DROP MULTIPLEXER
 PDH: PLESIOCHRONOUS DIGITAL HIERARCHY
 SDH: SYNCHRONOUS DIGITAL HIERARCHY
 SONET: SYNCHRONOUS OPTICAL NETWORK
 STM: SYNCHRONOUS TRANSFER MODE
 WDM: WAVELENGTH DIVISION MULTIPLEX

FIG. 4

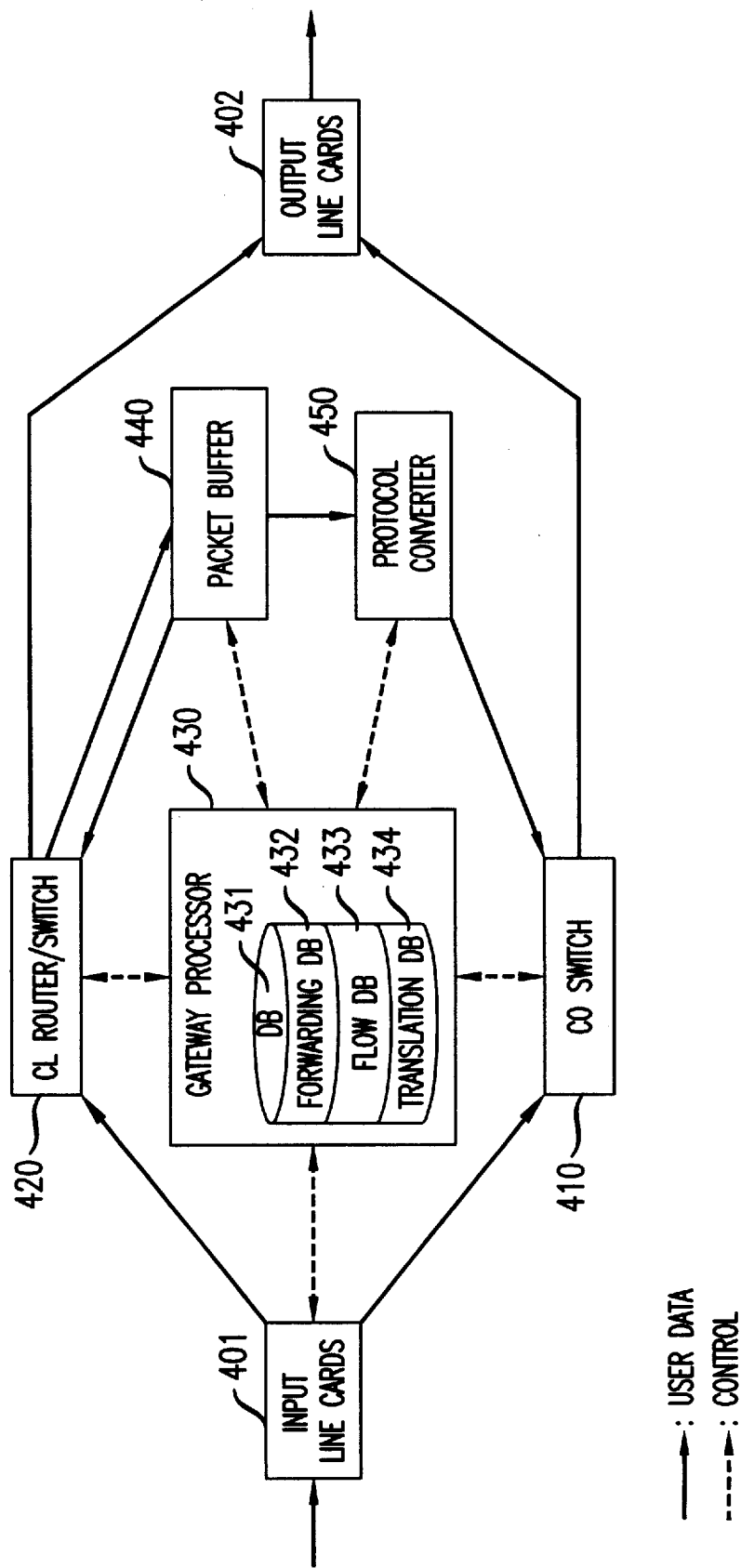
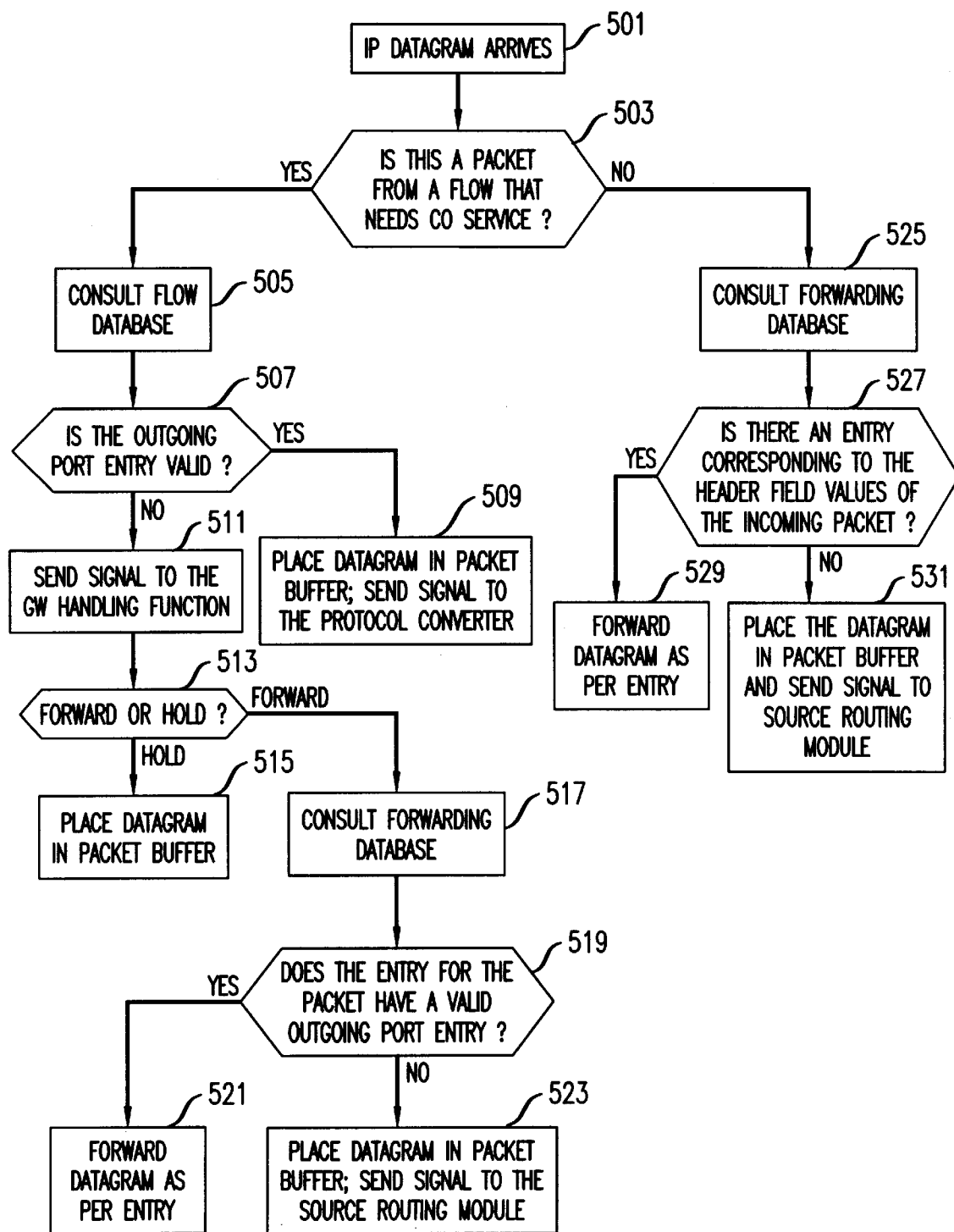


FIG. 5



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.